

Sequence Listing

<110> CSL Ltd and The Council of the Queensland Institute of  
Medical Research  
Webb, Elizabeth Ann  
Schoofs, Peter

<120> Expression of hydrophobic proteins

<130> 2349.0010000/JUK/WBC

<150> AU2002950183

<151> 2002-07-12

<160> 102

<170> PatentIn version 3.1

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<211> 233

<212> PRT

<213> epstein-barr virus (EBV)

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Phe Leu Arg Gly Arg Ala Tyr Gly Leu Pro Tyr Leu Phe Trp Leu Ala  
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Ala Ile His Arg Cys Gln Ala Ile Arg Lys Lys Arg Arg Ile Tyr Asp  
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Leu Ile Glu Leu Val Gln Pro Pro Gln Leu Thr Leu Gln Val Gly Leu  
35 40 45

Cys Thr Leu Val Ala Met Leu Arg Leu Arg Ala Glu Ala Gln Val Lys  
50 55 60

Ile Glu Asp Pro Pro Phe Asn Ser Leu Tyr Leu Leu Glu Met Leu Trp  
65 70 75 80

Arg Leu Gly Gln Gly Gly Ser Pro Thr Ala Met Ala Val Leu Leu His  
85 90 95

Glu Glu Ser Met Ile Ala Leu Tyr Leu Gln Gln Asn Trp Trp Thr Leu  
100 105 110

Arg Ala Lys Phe Lys Gln Leu Leu Ser Ser Cys Ser Ser Cys Pro Leu

115	120	125
Ser Lys Ile Thr Tyr Gly Pro Val Phe Met Cys Leu Gln Ala Lys Trp		
130	135	140
Arg Leu Gln Thr Leu Arg Pro Pro Ile Phe Ile Arg Arg Leu Val Ser		
145	150	155
		160
Phe Ile Glu Phe Val Gly Trp Tyr Pro Leu His Glu Gln His Gly Met		
	165	170
		175
Val Glu Ile Thr Pro Tyr Lys Pro Thr Trp Cys Leu Gly Gly Leu Leu		
	180	185
		190
Thr Met Val Glu Glu Asn Leu Leu Asp Phe Val Arg Phe Thr Tyr Ser		
	195	200
		205
Ala Gly Ile Val Gln Ile Leu Leu Asp Phe Val Arg Phe Met Gly Val		
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		220
Glu Gly Gly Val Gly Trp Arg His Trp		
225	230	
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Ala Ile His Arg Cys Gln Ala Ile Arg Lys Lys Arg Arg Ile Tyr Asp		
	20	25
		30
Leu Ile Glu Leu Gly Leu Cys Thr Leu Val Ala Met Leu Arg Leu Arg		
	35	40
		45
Ala Glu Ala Gln Val Lys Ile Glu Asp Pro Pro Phe Asn Ser Leu Thr		
	50	55
		60

Tyr Ser Ala Gly Ile Val Gln Ile Leu Leu Asp Phe Val Arg Phe Met  
65 70 75 80

Gly Val Glu Gly Gly Val Gly Trp Arg His Trp Ile Ala Leu Tyr Leu  
85 90 95

Gln Gln Asn Trp Trp Thr Leu Arg Ala Lys Phe Lys Gln Leu Leu Ser  
100 105 110

Ser Cys Ser Ser Cys Pro Leu Ser Lys Ile Thr Tyr Gly Pro Val Phe  
115 120 125

Met Cys Leu Gln Ala Lys Trp Arg Leu Gln Thr Leu Arg Pro Pro Ile  
130 135 140

Phe Ile Arg Arg Leu Val Ser Phe Ile Glu Phe Val Gly Trp Tyr Pro  
145 150 155 160

Leu His Glu Gln His Gly Met Val Glu Ile Thr Pro Tyr Lys Pro Thr  
165 170 175

Trp Cys Leu Gly Gly Leu Leu Thr Met Val Glu Glu Asn Leu Leu Asp  
180 185 190

Phe Val Arg Phe Tyr Leu Leu Glu Met Leu Trp Arg Leu Gly Gln Gly  
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Gly Ser Pro Thr Ala Met Ala Val Leu Leu His Glu Glu Ser Met Val  
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Gln Pro Pro Gln Leu Thr Leu Gln Val  
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Ile Arg Lys Lys Cys Leu Gly Gly Leu Leu Thr Met Val Leu Thr Ala  
 20 25 30

Gly Phe Leu Ile Phe Leu Arg Leu Arg Ala Glu Ala Gln Val Lys Ile  
 35 40 45

Glu Asp Pro Pro Phe Asn Ser Leu Leu Leu Ser Ala Trp Ile Leu Thr  
 50 55 60

Ala Arg Arg Arg Trp Arg Arg Leu Thr Val Pro Tyr Leu Phe Trp Leu  
 65 70 75 80

Ala Ala Ile Tyr Leu Leu Glu Met Leu Trp Arg Leu Gly Gln Gly Gly  
 85 90 95

Ser Pro Thr Ala Met Val Met Ser Asn Thr Leu Leu Ser Ala Trp Ala  
 100 105 110

Leu Leu Val Leu Tyr Ser Phe Ala Arg Ala Lys Phe Lys Gln Leu Leu  
 115 120 125

Ile Ala Leu Tyr Leu Gln Gln Asn Trp Thr Tyr Gly Pro Val Phe Met  
 130 135 140

Cys Leu Gln Ala Lys Trp Arg Leu Gln Thr Leu Tyr Leu Gln Gln Asn  
 145 150 155 160

Trp Trp Thr Leu Tyr Pro Leu His Glu Gln His Gly Met Cys Pro Leu  
 165 170 175

Ser Lys Ile Leu Leu  
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 <213> Human immunodeficiency virus

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Lys Lys Lys Ile Leu Lys Glu Pro Val His Gly Val Pro Leu Val Lys  
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35 40 45

Tyr Lys Leu Lys His Ile Val Trp Thr Trp Glu Thr Trp Trp Thr Glu  
50 55 60

Tyr Trp Glu Ile Lys Asp Thr Lys Glu Ala Leu Lys Arg Trp Ile Ile  
65 70 75 80

Leu Gly Leu Asn Lys Lys Leu Trp Val Thr Val Tyr Tyr Gly Val Lys  
85 90 95

Ile Glu Glu Leu Arg Gln His Leu Met Thr Asn Asn Pro Pro Ile Pro  
100 105 110

Val Val Thr Leu Trp Gln Arg Pro Leu Val Trp Ala Ser Arg Glu Leu  
115 120 125

Glu Arg Phe Leu Leu Trp Lys Gly Glu Gly Ala Val Tyr Thr Ala Phe  
130 135 140

Thr Ile Pro Ser Ile Ile Tyr Gln Glu Pro Phe Lys Asn Leu Lys Ser  
145 150 155 160

Leu Tyr Asn Thr Val Ala Thr Leu Ala Ile Ile Arg Ile Leu Gln Gln  
165 170 175

Leu Ala Ile Phe Gln Ser Ser Met Thr Lys Val Ile Tyr Gln Tyr Met  
180 185 190

Asp Asp Leu Leu Val Gly Pro Thr Pro Val Asn Ile Thr Pro Gln Asp  
195 200 205

Leu Asn Thr Met Leu Tyr Leu Ala Trp Val Pro Ala His Lys Ala Leu  
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Val Glu Ile Cys Thr Glu Met Thr Leu Asn Ala Trp Val Lys Val Val  
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Gln Pro Arg Phe Leu Leu Leu Ala Asp Ala Arg Val Leu Leu Phe Leu  
 20 25 30

Leu Leu Ala Asp Ala Arg Leu Gly Val Arg Ala Thr Arg Lys Gly Val  
 35 40 45

Ala Gly Ala Leu Val Ala Phe Lys Leu Pro Gly Cys Ser Phe Ser Ile  
 50 55 60

Phe Arg Met Tyr Val Gly Gly Val Glu His Arg Val Ala Gly Ala Leu  
 65 70 75 80

Val Ala Phe Lys Asp Leu Met Gly Tyr Ile Pro Leu Val Leu Ile Phe  
 85 90 95

Cys His Ser Lys Lys Lys Ile Leu Ala Gly Tyr Gly Ala Gly Val His  
 100 105 110

Met Trp Asn Phe Ile Ser Gly Ile Gln Leu Phe Thr Phe Ser Pro Arg  
 115 120 125

Arg Val Gly Ile Tyr Leu Leu Pro Asn Arg Phe Trp Ala Lys His Met  
 130 135 140

Trp Asn Phe Tyr Leu Val Thr Arg His Ala Asp Val Leu Ser Ala Phe  
145 150 155 160

Ser Leu His Ser Tyr Trp Met Asn Arg Leu Ile Ala Phe Ala Tyr Leu  
165 170 175

Leu Pro Arg Arg Gly Pro Arg Leu Tyr Leu Val Ala Tyr Gln Ala Thr  
180 185 190

Val Arg Leu Ile Val Phe Pro Asp Leu Gly Val Thr Leu Gly Phe Gly  
195 200 205

Ala Tyr Met Ser Lys Ile Pro Phe Tyr Gly Lys Ala Ile Val Leu Val  
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Gly Gly Val Leu Ala Ala Cys Thr Cys Gly Ser Ser Asp Leu Tyr  
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Leu Leu Asp Phe Val Arg Phe Met Gly Val

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Tyr Leu Leu Glu Met Leu Trp Arg Leu

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Arg Leu Arg Ala Glu Ala Gln Val Lys

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Pro Tyr Leu Phe Trp Leu Ala Ala Ile  
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Gln Ala Lys Trp Arg Leu Gln Thr Leu

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Arg Ala Lys Phe Lys Gln Leu Leu

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His Arg Cys Gln Ala Ile Arg Lys Lys

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Arg Arg Ile Tyr Asp Leu Ile Glu Leu

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Ala Val Leu Leu His Glu Glu Ser Met

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Tyr Pro Leu His Glu Gln His Gly Met

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Glu Glu Asn Leu Leu Asp Phe Val Arg Phe

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Glu Gly Gly Val Gly Trp Arg His Trp

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Val Glu Ile Thr Pro Tyr Lys Pro Thr Trp

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Val Gln Pro Pro Gln Leu Thr Leu Gln Val

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Ile Ala Leu Tyr Leu Gln Gln Asn Trp

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Ile Glu Asp Pro Pro Phe Asn Ser Leu

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Gly Gln Gly Gly Ser Pro Thr Ala Met

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<211> 30

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Ala Leu Leu Val Leu Tyr Ser Phe Ala  
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Arg Leu Arg Pro Gly Gly Lys Lys Lys  
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Lys Tyr Lys Leu Lys His Ile Val Trp  
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Trp Ala Ser Arg Glu Leu Glu Arg Phe  
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Arg Pro Gly Gly Lys Lys Lys Tyr Lys Leu  
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Ser Leu Tyr Asn Thr Val Ala Thr Leu  
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Glu Ile Lys Asp Thr Lys Glu Ala Leu

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Thr Leu Asn Ala Trp Val Lys Val Val

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Thr Pro Gln Asp Leu Asn Thr Met Leu

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Met Thr Asn Asn Pro Pro Ile Pro Val

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Val Thr Leu Trp Gln Arg Pro Leu Val



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Tyr Thr Ala Phe Thr Ile Pro Ser Ile

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Ala Ile Phe Gln Ser Ser Met Thr Lys

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Val Ile Tyr Gln Tyr Met Asp Asp Leu

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Lys Ile Glu Glu Leu Arg Gln His Leu

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Ile Leu Lys Glu Pro Val His Gly Val

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Ile Tyr Gln Glu Pro Phe Lys Asn Leu Lys

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Thr Trp Glu Thr Trp Trp Thr Glu Tyr Trp

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Pro Leu Val Lys Leu Trp Tyr Gln Leu  
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Tyr Leu Ala Trp Val Pro Ala His Lys  
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Leu Leu Trp Lys Gly Glu Gly Ala Val  
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Ile Pro Ile Val Ala Ile Val Ala Leu Val  
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Cys Thr Cys Gly Ser Ser Asp Leu Tyr  
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Phe Leu Leu Leu Ala Asp Ala Arg Val  
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Tyr Leu Val Ala Tyr Gln Ala Thr Val  
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Arg Leu Ile Val Phe Pro Asp Leu Gly Val  
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Asp Leu Met Gly Tyr Ile Pro Leu Val

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<211> 9

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<400> 73

Trp Met Asn Arg Leu Ile Ala Phe Ala

1 5

<210> 74

<211> 9

<212> PRT

<213> Hepatitis C virus

<400> 74

Val Leu Val Gly Gly Val Leu Ala Ala

1 5

<210> 75

<211> 9

<212> PRT

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His Met Trp Asn Phe Ile Ser Gly Ile

1 5

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Ile Leu Ala Gly Tyr Gly Ala Gly Val

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Tyr Leu Leu Pro Arg Arg Gly Pro Arg Leu

1 5 10

<210> 78

<211> 9

<212> PRT

<213> Hepatitis C virus

<400> 78

Leu Leu Phe Leu Leu Leu Ala Asp Ala

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<210> 79

<211> 9

<212> PRT

<213> Hepatitis C virus

<400> 79

Tyr Leu Val Thr Arg His Ala Asp Val

1 5

<210> 80

<211> 9

<212> PRT

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Lys Thr Ser Glu Arg Ser Gln Pro Arg

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Arg Leu Gly Val Arg Ala Thr Arg Lys

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Gln Leu Phe Thr Phe Ser Pro Arg Arg  
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Arg Met Tyr Val Gly Gly Val Glu His Arg  
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Leu Ile Phe Cys His Ser Lys Lys Lys  
1 5

<210> 85  
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Gly Val Ala Gly Ala Leu Val Ala Phe Lys  
1 5 10

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Val Ala Gly Ala Leu Val Ala Phe Lys  
1 5

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Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys  
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Leu Pro Gly Cys Ser Phe Ser Ile Phe  
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Leu Ser Ala Phe Ser Leu His Ser Tyr  
1 5

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Phe Trp Ala Lys His Met Trp Asn Phe  
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Val Gly Ile Tyr Leu Leu Pro Asn Arg  
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Leu Leu Phe Asn Ile Leu Gly Gly Trp Val  
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Ile Pro Phe Tyr Gly Lys Ala Ile  
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Met Val Asp Phe Leu Arg Gly Arg Ala Tyr Gly Leu Pro Tyr Leu Phe  
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Trp Leu Ala Ala Ile His Arg Cys Gln Ala Ile Arg Lys Lys Arg Arg  
 20 25 30

Ile Tyr Asp Leu Ile Glu Leu Val Gln Pro Pro Gln Leu Thr Leu Gln  
 35 40 45

Val Gly Leu Cys Thr Leu Val Ala Met Leu Arg Leu Arg Ala Glu Ala  
 50 55 60

Gln Val Lys Ile Glu Asp Pro Pro Phe Asn Ser Leu Tyr Leu Leu Glu  
 65 70 75 80

Met Leu Trp Arg Leu Gly Gln Gly Gly Ser Pro Thr Ala Met Ala Val  
 85 90 95

Leu Leu His Glu Glu Ser Met Ile Ala Leu Tyr Leu Gln Gln Asn Trp  
100 105 110

Trp Thr Leu Arg Ala Lys Phe Lys Gln Leu Leu Ser Ser Cys Ser Ser  
115 120 125

Cys Pro Leu Ser Lys Ile Thr Tyr Gly Pro Val Phe Met Cys Leu Gln  
130 135 140

Ala Lys Trp Arg Leu Gln Thr Leu Arg Pro Pro Ile Phe Ile Arg Arg  
145 150 155 160

Leu Val Ser Phe Ile Glu Phe Val Gly Trp Tyr Pro Leu His Glu Gln  
165 170 175

His Gly Met Val Glu Ile Thr Pro Tyr Lys Pro Thr Trp Cys Leu Gly  
180 185 190

Gly Leu Leu Thr Met Val Glu Glu Asn Leu Leu Asp Phe Val Arg Phe  
195 200 205

Thr Tyr Ser Ala Gly Ile Val Gln Ile Leu Leu Asp Phe Val Arg Phe  
210 215 220

Met Gly Val Glu Gly Gly Val Gly Trp Arg His Trp His His His His  
225 230 235 240

His His

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<213> epstein-barr virus (EBV)  
<400> 95

Met Val Asp Phe Leu Arg Gly Arg Ala Tyr Gly Leu Pro Tyr Leu Phe  
1 5 10 15

Trp	Leu	Ala	Ala	Ile	His	Arg	Cys	Gln	Ala	Ile	Arg	Lys	Lys	Arg	Arg			
																20	25	30
Ile	Tyr	Asp	Leu	Ile	Glu	Leu	Gly	Leu	Cys	Thr	Leu	Val	Ala	Met	Leu			
																35	40	45
Arg	Leu	Arg	Ala	Glu	Ala	Gln	Val	Lys	Ile	Glu	Asp	Pro	Pro	Phe	Asn			
																50	55	60
Ser	Leu	Thr	Tyr	Ser	Ala	Gly	Ile	Val	Gln	Ile	Leu	Leu	Asp	Phe	Val			
																65	70	75
Arg	Phe	Met	Gly	Val	Glu	Gly	Gly	Val	Gly	Trp	Arg	His	Trp	Ile	Ala			
																85	90	95
Leu	Tyr	Leu	Gln	Gln	Asn	Trp	Trp	Thr	Leu	Arg	Ala	Lys	Phe	Lys	Gln			
																100	105	110
Leu	Leu	Ser	Ser	Cys	Ser	Ser	Cys	Pro	Leu	Ser	Lys	Ile	Thr	Tyr	Gly			
																115	120	125
Pro	Val	Phe	Met	Cys	Leu	Gln	Ala	Lys	Trp	Arg	Leu	Gln	Thr	Leu	Arg			
																130	135	140
Pro	Pro	Ile	Phe	Ile	Arg	Arg	Leu	Val	Ser	Phe	Ile	Glu	Phe	Val	Gly			
																145	150	155
Trp	Tyr	Pro	Leu	His	Glu	Gln	His	Gly	Met	Val	Glu	Ile	Thr	Pro	Tyr			
																165	170	175
Lys	Pro	Thr	Trp	Cys	Leu	Gly	Gly	Leu	Leu	Thr	Met	Val	Glu	Glu	Asn			
																180	185	190
Leu	Leu	Asp	Phe	Val	Arg	Phe	Tyr	Leu	Leu	Glu	Met	Leu	Trp	Arg	Leu			
																195	200	205
Gly	Gln	Gly	Gly	Ser	Pro	Thr	Ala	Met	Ala	Val	Leu	Leu	His	Glu	Glu			
																210	215	220

Ser Met Val Gln Pro Pro Gln Leu Thr Leu Gln Val His His His His  
 225 230 235 240

His His

<210> 96  
 <211> 669  
 <212> PRT  
 <213> epstein-barr virus (EBV)

<400> 96

Met Glu Asp Pro Gly Phe Phe Asn Val Glu Ile Pro Glu Phe Pro Phe  
 1 5 10 15

Tyr Pro Thr Cys Asn Val Cys Thr Ala Asp Val Asn Val Thr Ile Asn  
 20 25 30

Phe Asp Val Gly Gly Lys Lys His Gln Leu Asp Leu Asp Phe Gly Gln  
 35 40 45

Leu Thr Pro His Thr Lys Ala Val Tyr Gln Pro Arg Gly Ala Phe Gly  
 50 55 60

Gly Ser Glu Asn Ala Thr Asn Leu Phe Leu Leu Glu Leu Leu Gly Ala  
 65 70 75 80

Gly Glu Leu Ala Leu Thr Met Arg Ser Lys Lys Leu Pro Ile Asn Val  
 85 90 95

Thr Thr Gly Glu Glu Gln Gln Val Ser Leu Glu Ser Val Asp Val Tyr  
 100 105 110

Phe Gln Asp Val Phe Gly Thr Met Trp Cys His His Ala Glu Met Gln  
 115 120 125

Asn Pro Val Tyr Leu Ile Pro Glu Thr Val Pro Tyr Ile Lys Trp Asp  
 130 135 140

Asn Cys Asn Ser Thr Asn Ile Thr Ala Val Val Arg Ala Gln Gly Leu

145	150	155	160
Asp Val Thr Leu Pro Leu Ser Leu Pro Thr Ser Ala Gln Asp Ser Asn			
	165	170	175
Phe Ser Val Lys Thr Glu Met Leu Gly Asn Glu Ile Asp Ile Glu Cys			
	180	185	190
Ile Met Glu Asp Gly Glu Ile Ser Gln Val Leu Pro Gly Asp Asn Lys			
	195	200	205
Phe Asn Ile Thr Cys Ser Gly Tyr Glu Ser His Val Pro Ser Gly Gly			
	210	215	220
Ile Leu Thr Ser Thr Ser Pro Val Ala Thr Pro Ile Pro Gly Thr Gly			
225	230	235	240
Tyr Ala Tyr Ser Leu Arg Leu Thr Pro Arg Pro Val Ser Arg Phe Leu			
	245	250	255
Gly Asn Asn Ser Ile Leu Tyr Val Phe Tyr Ser Gly Asn Gly Pro Lys			
	260	265	270
Ala Ser Gly Gly Asp Tyr Cys Ile Gln Ser Asn Ile Val Phe Ser Asp			
	275	280	285
Glu Ile Pro Ala Ser Gln Asp Met Pro Thr Asn Thr Thr Asp Ile Thr			
	290	295	300
Tyr Val Gly Asp Asn Ala Thr Tyr Ser Val Pro Met Val Thr Ser Glu			
305	310	315	320
Asp Ala Asn Ser Pro Asn Val Thr Val Thr Ala Phe Trp Ala Trp Pro			
	325	330	335
Asn Asn Thr Glu Thr Asp Phe Lys Cys Lys Trp Thr Leu Thr Ser Gly			
	340	345	350
Thr Pro Ser Gly Cys Glu Asn Ile Ser Gly Ala Phe Ala Ser Asn Arg			

355	360	365
Thr Phe Asp Ile Thr Val Ser Gly Leu Gly Thr Ala Pro Lys Thr Leu		
370	375	380
Ile Ile Thr Arg Thr Ala Thr Asn Ala Thr Thr Thr Thr His Lys Val		
385	390	395 400
Ile Phe Ser Lys Ala Pro Glu Ser Thr Thr Thr Ser Pro Thr Leu Asn		
405	410	415
Thr Thr Gly Phe Ala Asp Pro Asn Thr Thr Thr Gly Val Asp Phe Leu		
420	425	430
Arg Gly Arg Ala Tyr Gly Leu Pro Tyr Leu Phe Trp Leu Ala Ala Ile		
435	440	445
His Arg Cys Gln Ala Ile Arg Lys Lys Arg Arg Ile Tyr Asp Leu Ile		
450	455	460
Glu Leu Val Gln Pro Pro Gln Leu Thr Leu Gln Val Gly Leu Cys Thr		
465	470	475 480
Leu Val Ala Met Leu Arg Leu Arg Ala Glu Ala Gln Val Lys Ile Glu		
485	490	495
Asp Pro Pro Phe Asn Ser Leu Tyr Leu Leu Glu Met Leu Trp Arg Leu		
500	505	510
Gly Gln Gly Gly Ser Pro Thr Ala Met Ala Val Leu Leu His Glu Glu		
515	520	525
Ser Met Ile Ala Leu Tyr Leu Gln Gln Asn Trp Trp Thr Leu Arg Ala		
530	535	540
Lys Phe Lys Gln Leu Leu Ser Ser Cys Ser Ser Cys Pro Leu Ser Lys		
545	550	555 560
Ile Thr Tyr Gly Pro Val Phe Met Cys Leu Gln Ala Lys Trp Arg Leu		

565	570	575
Gln Thr Leu Arg Pro Pro Ile Phe Ile Arg Arg Leu Val Ser Phe Ile		
580	585	590
Glu Phe Val Gly Trp Tyr Pro Leu His Glu Gln His Gly Met Val Glu		
595	600	605
Ile Thr Pro Tyr Lys Pro Thr Trp Cys Leu Gly Gly Leu Leu Thr Met		
610	615	620
Val Glu Glu Asn Leu Leu Asp Phe Val Arg Phe Thr Tyr Ser Ala Gly		
625	630	635
Ile Val Gln Ile Leu Leu Asp Phe Val Arg Phe Met Gly Val Glu Gly		
645	650	655
Gly Val Gly Trp Arg His Trp His His His His His His		
660	665	
<210> 97		
<211> 669		
<212> PRT		
<213> epstein-barr virus (EBV)		
<400> 97		
Met Glu Asp Pro Gly Phe Phe Asn Val Glu Ile Pro Glu Phe Pro Phe		
1	5	10
		15
Tyr Pro Thr Cys Asn Val Cys Thr Ala Asp Val Asn Val Thr Ile Asn		
20	25	30
Phe Asp Val Gly Gly Lys Lys His Gln Leu Asp Leu Asp Phe Gly Gln		
35	40	45
Leu Thr Pro His Thr Lys Ala Val Tyr Gln Pro Arg Gly Ala Phe Gly		
50	55	60
Gly Ser Glu Asn Ala Thr Asn Leu Phe Leu Leu Glu Leu Leu Gly Ala		
65	70	75
		80

Gly	Glu	Leu	Ala	Leu	Thr	Met	Arg	Ser	Lys	Lys	Leu	Pro	Ile	Asn	Val	85	90	95	
Thr	Thr	Gly	Glu	Glu	Gln	Gln	Val	Ser	Leu	Glu	Ser	Val	Asp	Val	Tyr	100	105	110	
Phe	Gln	Asp	Val	Phe	Gly	Thr	Met	Trp	Cys	His	His	Ala	Glu	Met	Gln	115	120	125	
Asn	Pro	Val	Tyr	Leu	Ile	Pro	Glu	Thr	Val	Pro	Tyr	Ile	Lys	Trp	Asp	130	135	140	
Asn	Cys	Asn	Ser	Thr	Asn	Ile	Thr	Ala	Val	Val	Arg	Ala	Gln	Gly	Leu	145	150	155	160
Asp	Val	Thr	Leu	Pro	Leu	Ser	Leu	Pro	Thr	Ser	Ala	Gln	Asp	Ser	Asn	165	170	175	
Phe	Ser	Val	Lys	Thr	Glu	Met	Leu	Gly	Asn	Glu	Ile	Asp	Ile	Glu	Cys	180	185	190	
Ile	Met	Glu	Asp	Gly	Glu	Ile	Ser	Gln	Val	Leu	Pro	Gly	Asp	Asn	Lys	195	200	205	
Phe	Asn	Ile	Thr	Cys	Ser	Gly	Tyr	Glu	Ser	His	Val	Pro	Ser	Gly	Gly	210	215	220	
Ile	Leu	Thr	Ser	Thr	Ser	Pro	Val	Ala	Thr	Pro	Ile	Pro	Gly	Thr	Gly	225	230	235	240
Tyr	Ala	Tyr	Ser	Leu	Arg	Leu	Thr	Pro	Arg	Pro	Val	Ser	Arg	Phe	Leu	245	250	255	
Gly	Asn	Asn	Ser	Ile	Leu	Tyr	Val	Phe	Tyr	Ser	Gly	Asn	Gly	Pro	Lys	260	265	270	
Ala	Ser	Gly	Gly	Asp	Tyr	Cys	Ile	Gln	Ser	Asn	Ile	Val	Phe	Ser	Asp	275	280	285	



Glu Ile Pro Ala Ser Gln Asp Met Pro Thr Asn Thr Thr Asp Ile Thr  
 290 295 300

Tyr Val Gly Asp Asn Ala Thr Tyr Ser Val Pro Met Val Thr Ser Glu  
 305 310 315 320

Asp Ala Asn Ser Pro Asn Val Thr Val Thr Ala Phe Trp Ala Trp Pro  
 325 330 335

Asn Asn Thr Glu Thr Asp Phe Lys Cys Lys Trp Thr Leu Thr Ser Gly  
 340 345 350

Thr Pro Ser Gly Cys Glu Asn Ile Ser Gly Ala Phe Ala Ser Asn Arg  
 355 360 365

Thr Phe Asp Ile Thr Val Ser Gly Leu Gly Thr Ala Pro Lys Thr Leu  
 370 375 380

Ile Ile Thr Arg Thr Ala Thr Asn Ala Thr Thr Thr Thr His Lys Val  
 385 390 395 400

Ile Phe Ser Lys Ala Pro Glu Ser Thr Thr Thr Ser Pro Thr Leu Asn  
 405 410 415

Thr Thr Gly Phe Ala Asp Pro Asn Thr Thr Thr Gly Val Asp Phe Leu  
 420 425 430

Arg Gly Arg Ala Tyr Gly Leu Pro Tyr Leu Phe Trp Leu Ala Ala Ile  
 435 440 445

His Arg Cys Gln Ala Ile Arg Lys Lys Arg Arg Ile Tyr Asp Leu Ile  
 450 455 460

Glu Leu Gly Leu Cys Thr Leu Val Ala Met Leu Arg Leu Arg Ala Glu  
 465 470 475 480

Ala Gln Val Lys Ile Glu Asp Pro Pro Phe Asn Ser Leu Thr Tyr Ser  
 485 490 495

Ala Gly Ile Val Gln Ile Leu Leu Asp Phe Val Arg Phe Met Gly Val  
500 505 510

Glu Gly Gly Val Gly Trp Arg His Trp Ile Ala Leu Tyr Leu Gln Gln  
515 520 525

Asn Trp Trp Thr Leu Arg Ala Lys Phe Lys Gln Leu Leu Ser Ser Cys  
530 535 540

Ser Ser Cys Pro Leu Ser Lys Ile Thr Tyr Gly Pro Val Phe Met Cys  
545 550 555 560

Leu Gln Ala Lys Trp Arg Leu Gln Thr Leu Arg Pro Pro Ile Phe Ile  
565 570 575

Arg Arg Leu Val Ser Phe Ile Glu Phe Val Gly Trp Tyr Pro Leu His  
580 585 590

Glu Gln His Gly Met Val Glu Ile Thr Pro Tyr Lys Pro Thr Trp Cys  
595 600 605

Leu Gly Gly Leu Leu Thr Met Val Glu Glu Asn Leu Leu Asp Phe Val  
610 615 620

Arg Phe Tyr Leu Leu Glu Met Leu Trp Arg Leu Gly Gln Gly Gly Ser  
625 630 635 640

Pro Thr Ala Met Ala Val Leu Leu His Glu Glu Ser Met Val Gln Pro  
645 650 655

Pro Gln Leu Thr Leu Gln Val His His His His His His  
660 665

<210> 98  
<211> 187  
<212> PRT  
<213> epstein-barr virus (EBV)  
<400> 98

Ser Ser Cys Ser Ser Cys Pro Leu Ser Lys Ile His Arg Cys Gln Ala  
 1 5 10 15  
 Ile Arg Lys Lys Cys Leu Gly Gly Leu Leu Thr Met Val Leu Thr Ala  
 20 25 30  
 Gly Phe Leu Ile Phe Leu Arg Leu Arg Ala Glu Ala Gln Val Lys Ile  
 35 40 45  
 Glu Asp Pro Pro Phe Asn Ser Leu Leu Leu Ser Ala Trp Ile Leu Thr  
 50 55 60  
 Ala Arg Arg Arg Trp Arg Arg Leu Thr Val Pro Tyr Leu Phe Trp Leu  
 65 70 75 80  
 Ala Ala Ile Tyr Leu Leu Glu Met Leu Trp Arg Leu Gly Gln Gly Gly  
 85 90 95  
 Ser Pro Thr Ala Met Val Met Ser Asn Thr Leu Leu Ser Ala Trp Ala  
 100 105 110  
 Leu Leu Val Leu Tyr Ser Phe Ala Arg Ala Lys Phe Lys Gln Leu Leu  
 115 120 125  
 Ile Ala Leu Tyr Leu Gln Gln Asn Trp Thr Tyr Gly Pro Val Phe Met  
 130 135 140  
 Cys Leu Gln Ala Lys Trp Arg Leu Gln Thr Leu Tyr Leu Gln Gln Asn  
 145 150 155 160  
 Trp Trp Thr Leu Tyr Pro Leu His Glu Gln His Gly Met Cys Pro Leu  
 165 170 175  
 Ser Lys Ile Leu Leu His His His His His His  
 180 185

<210> 99  
 <211> 246  
 <212> PRT  
 <213> Human immunodeficiency virus

<400> 99

Ile Pro Ile Val Ala Ile Val Ala Leu Val Arg Leu Arg Pro Gly Gly  
1 5 10 15

Lys Lys Lys Ile Leu Lys Glu Pro Val His Gly Val Pro Leu Val Lys  
20 25 30

Leu Trp Tyr Gln Leu Arg Pro Gly Gly Lys Lys Lys Tyr Lys Leu Lys  
35 40 45

Tyr Lys Leu Lys His Ile Val Trp Thr Trp Glu Thr Trp Trp Thr Glu  
50 55 60

Tyr Trp Glu Ile Lys Asp Thr Lys Glu Ala Leu Lys Arg Trp Ile Ile  
65 70 75 80

Leu Gly Leu Asn Lys Lys Leu Trp Val Thr Val Tyr Tyr Gly Val Lys  
85 90 95

Ile Glu Glu Leu Arg Gln His Leu Met Thr Asn Asn Pro Pro Ile Pro  
100 105 110

Val Val Thr Leu Trp Gln Arg Pro Leu Val Trp Ala Ser Arg Glu Leu  
115 120 125

Glu Arg Phe Leu Leu Trp Lys Gly Glu Gly Ala Val Tyr Thr Ala Phe  
130 135 140

Thr Ile Pro Ser Ile Ile Tyr Gln Glu Pro Phe Lys Asn Leu Lys Ser  
145 150 155 160

Leu Tyr Asn Thr Val Ala Thr Leu Ala Ile Ile Arg Ile Leu Gln Gln  
165 170 175

Leu Ala Ile Phe Gln Ser Ser Met Thr Lys Val Ile Tyr Gln Tyr Met  
180 185 190

Asp Asp Leu Leu Val Gly Pro Thr Pro Val Asn Ile Thr Pro Gln Asp  
195 200 205

Leu Asn Thr Met Leu Tyr Leu Ala Trp Val Pro Ala His Lys Ala Leu  
 210 215 220

Val Glu Ile Cys Thr Glu Met Thr Leu Asn Ala Trp Val Lys Val Val  
 225 230 235 240

His His His His His His  
 245

<210> 100  
 <211> 246  
 <212> PRT  
 <213> Human immunodeficiency virus

<400> 100

Ile Leu Lys Glu Pro Val His Gly Val Lys Arg Trp Ile Ile Leu Gly  
 1 5 10 15

Leu Asn Lys Thr Leu Asn Ala Trp Val Lys Val Val Lys Ile Glu Glu  
 20 25 30

Leu Arg Gln His Leu Tyr Thr Ala Phe Thr Ile Pro Ser Ile Trp Ala  
 35 40 45

Ser Arg Glu Leu Glu Arg Phe Pro Leu Val Lys Leu Trp Tyr Gln Leu  
 50 55 60

Leu Val Gly Pro Thr Pro Val Asn Ile Ile Pro Ile Val Ala Ile Val  
 65 70 75 80

Ala Leu Val Ser Leu Tyr Asn Thr Val Ala Thr Leu Met Thr Asn Asn  
 85 90 95

Pro Pro Ile Pro Val Leu Leu Trp Lys Gly Glu Gly Ala Val Thr Trp  
 100 105 110

Glu Thr Trp Trp Thr Glu Tyr Trp Ala Ile Phe Gln Ser Ser Met Thr  
 115 120 125

Lys Arg Leu Arg Pro Gly Gly Lys Lys Lys Ala Leu Val Glu Ile Cys  
 130 135 140

Thr Glu Met Lys Leu Trp Val Thr Val Tyr Tyr Gly Val Tyr Leu Ala  
 145 150 155 160

Trp Val Pro Ala His Lys Ala Ile Ile Arg Ile Leu Gln Gln Leu Glu  
 165 170 175

Ile Lys Asp Thr Lys Glu Ala Leu Val Thr Leu Trp Gln Arg Pro Leu  
 180 185 190

Val Ile Tyr Gln Glu Pro Phe Lys Asn Leu Lys Val Ile Tyr Gln Tyr  
 195 200 205

Met Asp Asp Leu Thr Pro Gln Asp Leu Asn Thr Met Leu Arg Pro Gly  
 210 215 220

Gly Lys Lys Lys Tyr Lys Leu Lys Tyr Lys Leu Lys His Ile Val Trp  
 225 230 235 240

His His His His His His  
 245

<210> 101  
 <211> 245  
 <212> PRT  
 <213> Hepatitis C virus

<400> 101

Leu Leu Phe Asn Ile Leu Gly Gly Trp Val Lys Thr Ser Glu Arg Ser  
 1 5 10 15

Gln Pro Arg Phe Leu Leu Leu Ala Asp Ala Arg Val Leu Leu Phe Leu  
 20 25 30

Leu Leu Ala Asp Ala Arg Leu Gly Val Arg Ala Thr Arg Lys Gly Val  
 35 40 45

Ala Gly Ala Leu Val Ala Phe Lys Leu Pro Gly Cys Ser Phe Ser Ile  
 50 55 60

Phe Arg Met Tyr Val Gly Gly Val Glu His Arg Val Ala Gly Ala Leu  
65 70 75 80

Val Ala Phe Lys Asp Leu Met Gly Tyr Ile Pro Leu Val Leu Ile Phe  
85 90 95

Cys His Ser Lys Lys Lys Ile Leu Ala Gly Tyr Gly Ala Gly Val His  
100 105 110

Met Trp Asn Phe Ile Ser Gly Ile Gln Leu Phe Thr Phe Ser Pro Arg  
115 120 125

Arg Val Gly Ile Tyr Leu Leu Pro Asn Arg Phe Trp Ala Lys His Met  
130 135 140

Trp Asn Phe Tyr Leu Val Thr Arg His Ala Asp Val Leu Ser Ala Phe  
145 150 155 160

Ser Leu His Ser Tyr Trp Met Asn Arg Leu Ile Ala Phe Ala Tyr Leu  
165 170 175

Leu Pro Arg Arg Gly Pro Arg Leu Tyr Leu Val Ala Tyr Gln Ala Thr  
180 185 190

Val Arg Leu Ile Val Phe Pro Asp Leu Gly Val Thr Leu Gly Phe Gly  
195 200 205

Ala Tyr Met Ser Lys Ile Pro Phe Tyr Gly Lys Ala Ile Val Leu Val  
210 215 220

Gly Gly Val Leu Ala Ala Cys Thr Cys Gly Ser Ser Asp Leu Tyr His  
225 230 235 240

His His His His His  
245

<210> 102  
<211> 245  
<212> PRT

<213> Hepatitis C virus

<400> 102

Tyr Leu Val Thr Arg His Ala Asp Val Trp Met Asn Arg Leu Ile Ala  
1 5 10 15

Phe Ala Cys Thr Cys Gly Ser Ser Asp Leu Tyr Val Gly Ile Tyr Leu  
20 25 30

Leu Pro Asn Arg Ile Leu Ala Gly Tyr Gly Ala Gly Val Leu Ile Phe  
35 40 45

Cys His Ser Lys Lys Lys His Met Trp Asn Phe Ile Ser Gly Ile Phe  
50 55 60

Leu Leu Leu Ala Asp Ala Arg Val Leu Leu Phe Leu Leu Leu Ala Asp  
65 70 75 80

Ala Leu Ser Ala Phe Ser Leu His Ser Tyr Gly Val Ala Gly Ala Leu  
85 90 95

Val Ala Phe Lys Lys Thr Ser Glu Arg Ser Gln Pro Arg Arg Leu Gly  
100 105 110

Val Arg Ala Thr Arg Lys Asp Leu Met Gly Tyr Ile Pro Leu Val Val  
115 120 125

Leu Val Gly Gly Val Leu Ala Ala Leu Leu Phe Asn Ile Leu Gly Gly  
130 135 140

Trp Val Tyr Leu Val Ala Tyr Gln Ala Thr Val Tyr Leu Leu Pro Arg  
145 150 155 160

Arg Gly Pro Arg Leu Phe Trp Ala Lys His Met Trp Asn Phe Gln Leu  
165 170 175

Phe Thr Phe Ser Pro Arg Arg Leu Pro Gly Cys Ser Phe Ser Ile Phe  
180 185 190



Ile Pro Phe Tyr Gly Lys Ala Ile Arg Met Tyr Val Gly Gly Val Glu  
195 200 205

His Arg Thr Leu Gly Phe Gly Ala Tyr Met Ser Lys Arg Leu Ile Val  
210 215 220

Phe Pro Asp Leu Gly Val Val Ala Gly Ala Leu Val Ala Phe Lys His  
225 230 235 240

His His His His His  
245